GRAVIS™

UltraSound™ Plug & Play

USER'S GUIDE

How to Use this Guide

Book Topics

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UltraSound Plug & Play

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Introduction

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Introduction

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Introduction

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Thank you for choosing the Gravis UltraSound™ Plug & Play. UltraSound Plug & Play works transparently with Windows® 95. All you have to do is plug it into your system, and you're ready to experience dynamic wavetable sound!

Of course, UltraSound Plug & Play also works with DOS and Windows 3.1 systems.

UltraSound Plug & Play is a full-featured 16-bit sound card, featuring:

- A true wavetable music synthesizer with a 16-bit General MIDI sound set built in to the card.
- Slots for 8 MB of optional RAM memory that allow you add UltraSound custom instrument and sound effect capabilities.
- Seamless support for all Windows 95 games, UltraSound games (with optional RAM added) and software support for games written for Roland® MT-32, SCC-1, Adlib®, and Sound Blaster™.
- Full duplex operation: simultaneous recording and playback for bi-directional communication in Internet applications.

...Introduction, cont'd.

- Up to 32 simultaneous voices and 32 digital channels, with full mixing capabilities.
- ADPCM, A-law, and μ-law sound compression.
- IDE CD-ROM data interface, and 2 CD audio connectors

Where to Start

UltraSound owners have a variety of sound needs. Use this guide to find the best way to use UltraSound for your own applications.

Using UltraSound with Windows™

Try your UltraSound right away using the simple sound applets that come with Windows version 3.1 or later. Use Media Player to play sound files with your UltraSound. Or hook up a microphone and use Sound Recorder to record, mix, and play your own sounds. See the Windows manual for instructions.

Open the UltraPnP Mixer to enable inputs and outputs and adjust volume levels.

Once you have had a chance to explore your UltraSound's features with these simple applications, try the great bonus games and music programs on your UltraSound software CD.

Using UltraSound with Music Applications

Advanced Gravis has included several software applications for recording, playing, mixing, and composing with your new UltraSound.

...Where to Start, cont'd.

WinDecks™. A Windows application with all the tools for sound recording, mixing, and playback, in an easy-to-use "stereo component" layout.

Cakewalk Express™. A MIDI sequencing application for Windows.

Sound Forge™. A full-featured sound editing program for Windows.

Power Chords Debut™. An guitar-based music creation program.

Play. A DOS command line-based program for playing sound files.

Volume Control

The most convenient way to control your UltraSound card's output volume is to use the volume dial on your headphones, amplified speakers, or stereo.

The UltraPnP Mixer in Windows lets you adjust the left and right channels of each input and output individually. Adjust wave and MIDI output volume levels; change line, CD, and microphone input levels; and mute inputs that you aren't using (a good idea to reduce noise levels). See Chapter 2 for instructions.

For games, you can still use the volume dial on your speakers or stereo, of course, but most games also include a volume control option in their Setup program. See the game's Help file or manual for instructions.

System Requirements

- IBM compatible 386 or greater.
- MS DOS 5.0 or greater
- VGA or SVGA monitor and video card
- Hard disk drive (20 milliseconds or better seek time)
- For Windows™ applications, Windows™ 3.1 in 386 Enhanced mode is required

System Recommendations:

- 386–25 MHz or greater, with at least 4 MB of RAM
- MS DOS 6.0 or greater
- Microsoft® compatible mouse
- Gravis PC or Pro Joystick, PC GamePad, Phoenix, or Firebird (not required for sound)

Note! The requirements for bonus software programs may vary from UltraSound's basic system requirements.

Sound for Games

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Introduction

Using UltraSound with Windows Programs and Games

Using UltraSound with DOS Games

Introduction

In Windows 3.1 and Windows 95, of course, sound support is automatic. With DOS games, a variety of sound support options for games are available to you.

✳ **Please remember, unless your UltraSound Plug & Play has at least 512K of RAM memory installed on it, you will hear no sound if you choose "UltraSound" support in most games.**

Read the following sections for the best sound support options.

Using UltraSound with Windows Programs and Games

Note: If you have been playing DOS games, make sure that IWSBOS is unloaded before you start Windows, or it may cause your Windows session to hang. Type: IWSBOSOFF at any DOS prompt.

Windows 95 auto-detects the card; just run the program as usual.

Using UltraSound with DOS Games

Before you Play the Game

Run PREPGAME. From your \ULTRAPNP directory, type: PREPGAME [path/game.exe]

This utility prepares the sound drivers in many games to work with UltraSound Plug & Play.

You need run PREPGAME only once for each of your games.

When PREPGAME finishes running, it displays instructions for setting up sound for the game. If the game's sound drivers will not work with UltraSound Plug & Play, PREPGAME will instruct you to use IWSBOS or MEGA–EM.

For best results, always run your DOS games from your previous version of DOS or from Windows 95 MS-DOS Mode (by choosing Shutdown, then selecting Restart in MS-DOS Mode). Game performance and sound support may suffer if you try to run games from a Windows 95 DOS box.

If the program's list of supported sound cards includes UltraSound Plug & Play:

Select it, and play the game!

Again, remember: Unless your card has RAM added, you will hear no sound if you choose regular "UltraSound" in most games—select UltraSound Plug & Play or use Mega–Em or IWSBOS to emulate a Roland or Sound Blaster card.

If the program's does not support UltraSound Plug & Play:

Use IWSBOS or Mega–Em to emulate another sound card.

To run IWSBOS:

1. From a DOS prompt, type IWSBOS and press Enter.
2. Start the game.

...Using UltraSound with DOS Games, cont'd.

IWINIT.EXE

It's a good idea to run IWINIT.EXE to reinitialize the sound card between games, especially if you have used IWSBOS or Mega-Em for sound emulation. At any DOS prompt, type: IWINIT and press Enter.

3. If the game asks you to select a sound card, choose Sound Blaster™.
4. Play the game as usual.
5. When you finish the game, type: IWSBOSOFF to unload IWSBOS.

Make sure that IWSBOS is unloaded before you start Windows, or it may cause your Windows session to hang. Type: IWSBOSOFF at any DOS prompt.

To use Mega-Em:

1. From a DOS prompt, type MEGAEM and press Enter.

   Mega-Em requires a memory manager such as EMM386, QEMM386, or 386MAX.

2. Start the game.
3. If the game asks you to select a sound device, choose one of these:

   Roland® Sound Canvas/SCC1
   Roland MT-32*
   Sound Blaster™
   Roland + Sound Blaster

...Using UltraSound with DOS Games, cont'd.

*To emulate the Roland MT-32, quit the game, type: MEGAEM -MT and press Enter, then re-start the game and select MT-32.

4. Play the game as usual.
5. When you finish the game, type: MEGAEM -F to unload Mega–Em.

WinDecks™

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Introduction

The Component Selector Bar

The Standard Control Buttons

The Playlist

The Wave Player

The MIDI Player

The CD Audio Player

The Mixer

Introduction

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Gravis WinDecks™ is a complete sound center for your PC. WinDecks is designed for use with a Gravis UltraSound or any other PC sound card. You should be able to accomplish all your sound file playing, recording, and mixing tasks directly from this application. The stereo-rack interface includes four separate components:

- A Mixer for adjusting sound output
- A MIDI player
- A WAV player
- A CD audio player

You can control each component from the rack if you like, or you can press the rack component's "Remote" button to use its small, moveable remote controller instead.

To Start WinDecks:

Double-click on the WinDecks icon in your Gravis UltraSound folder.

...Introduction, cont'd.

What You Need

IBM ® PC or compatible 386 or better

Windows® 3.1 or higher in Enhanced mode or Windows 95

VGA, minimum resolution 640x480x16

Gravis UltraSound, UltraSound MAX, UltraSound ACE, UltraSound Plug & Play or any standard PC sound card

How to Get Help

For a description of what any button or control does, click your right mouse button on the control. Press F1 at any time to view the full Help file.

The Component Selector Bar

The top bar in the rack interface is the Component Selector Bar. It contains buttons to display each of the available components. To display a rack component, click its button.

Press the **Power** button to shut down the program.

Press **Min** to minimize the program to a small icon at the bottom of your Windows screen.

Press the **Help** button to view the WinDecks Help file.

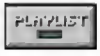
Press **Setup** to open the Configuration Options window.

This window allows you to define Default Directories to make it easier and faster to find your WAV, MIDI, and Playlist files. Type the complete path to the directory where you keep most of your files of each type. For instance, your might type C:\ULTRASND\MIDI for your MIDI file Default Directory.

...The Component Selector Bar, cont'd.

Playlist files are WinDecks playlists (lists of WAV and MIDI files and CD tracks) that you have saved to play back later.

The Component Order section allows you to define the order that the WinDecks components will appear on your screen when you start the program. Press the down arrow and select from the drop-down listbox to select components 1 (top component) through 4.



Press the **Playlist** button to turn Playlist control off and on. When the Playlist is selected (with the button's green LED lit up), the controls on each of the components (Play, Stop, Next Track, etc.) actually control the Playlist, even if the file or track currently playing is using a different component. So pressing Play on the CD Player will start the Playlist, even if the first entry in the Playlist is a WAV file.

The Playlist button does not open the Playlist for editing. To open the Playlist, click the **Program** button on one of the components.

The Selector Bar also displays the current time, based on the time set in your Windows Date/Time Control Panel.

The Standard Control Buttons

The rack components and Remotes use some common buttons.

Play. Clicking this button starts playback from the current position in the file or track (the beginning if you just loaded the file or track).

If the Playlist button is active (with the green LED lit), and you have programmed files or tracks into the Playlist, the Play button will start from the current position in the Playlist, even if the file uses a different rack component. For instance, if you press Play on the CD player, and the current position in the Playlist is the beginning of a WAV file, the WAV file will begin playing.

Stop. Stops playback and returns to the beginning of the current file or track.

Rewind. "Rewinds" or goes backwards through the file or track. If you press Rewind while a file or track is playing, you will hear the file play backwards while it rewinds; if you press Pause first, then Rewind, it will rewind in silence.

Skip to Beginning/Previous Track. Skips to the beginning of the active file or track or, if the Playlist is active, skips to the previous track.

...The Standard Control Buttons, cont'd.

Skip to End/Next Track. Skips to the end of the active file or track or, if the Playlist is active, skips to the next track.

Forward. Speeds up playbback. If you press Forward while a file or track is playing, you will hear the file play rapidly; if you press Pause first, then Forward, you will hear nothing as you move forward through the file or track.

Pause. Pauses playback at the current position in the file or track.

Program. On the MIDI, WAV, and CD components only. Opens the Playlist, where you can use standard file dialogs to load a single file into the component or to create a "play list" of files. See Chapter 4, The Playlist for detailed instructions.

Remote. Removes the component from the rack and displays its small Remote controller.

...The Standard Control Buttons, cont'd.

The Remote controllers are equipped with the main controls for the component, and they are small enough that you should be able to keep them on screen to control audio playback while you work in other applications.

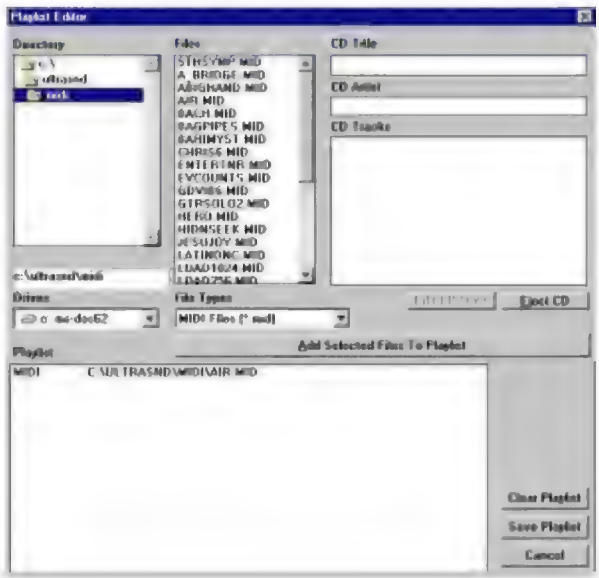
Random. Press the Random button to play files and tracks from the Playlist in random order.

Repeat. If you press the Repeat button while a Playlist is active, it will repeat the entire Playlist over and over until you Press Repeat a second time. If you press Repeat while a single file or track is playing, it will repeat the file or track over and over until you press Repeat a second time.

Display. The display button toggles through several display options. By default, the display shows the current track or file and total number of tracks or files, and shows the time remaining. Each press of the button will change the display: view the time remaining or elapsed in the current track or in the component's files or tracks in the Playlist.

The Playlist

Pressing the **Program** button on any of the components opens the Playlist Editor.



...The Playlist, cont'd.

The Playlist is a list of files or CD tracks that you want to play, in order or randomly, on one or all of your WinDecks components. You can create and save as many Playlist files as you like. The Playlist also allows you to enter and save information about your audio CDs: CD title, artist, and the names of all tracks.

The standard file dialog allows you to select .WAV, .MID, and Playlist files from any directory. By default, the Playlist Editor displays the directories specified in the Setup/Configuration Options window.

Opening Playlist Files

1. Choose Playlist files (.pls) from the File Types listbox.
2. Choose the directory where your Playlist files are stored, then double-click the file to open it.

Adding Files to the Playlist

1. Choose the file type you wish to display from the File Types listbox.
2. Choose a directory, select a file or files, and click Add Selected Files to Playlist (or double-click on files to add them to the Playlist). Or

...The Playlist, cont'd.

select a track or tracks from the CD Tracks listbox, if a CD is currently loaded.

3. Continue loading as many files and tracks as you like. Files are always added to the end of the Playlist.

To delete files in the Playlist, select them and press Delete or double-click them. To clear the entire Playlist and start over, click Clear Playlist.

4. When you are finished, click OK

Saving a Playlist

To save a Playlist file to use again later, click Save Playlist. A standard Save dialog opens, using the Default directory you chose in the Setup/Configuration Options window.

Editing CD Data

Click Edit CD Data to edit the CD title, artist, and track information. Click OK when you're finished.

WinDecks "remembers" this CD information and displays it automatically in the Playlist Editor the next time you insert the CD in your drive.

...The Playlist, cont'd.

Click Eject CD to eject the CD from your CD-ROM drive.

Select the Stop CD on exit checkbox to stop CD playback when you quit the WinDecks program. If you leave this checkbox deselected, the CD will continue to play until it ends or, if you have selected the Repeat option, until you exit Windows.

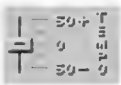
The WAV Player

The WAV Player allows you to load and play WAV files.

The display on the WAV component shows current track and, while the track is playing, shows the time elapsed and time remaining in hours, minutes, seconds, and tenths of a second.

The WAV player's display shows the Time Elapsed and Time Remaining in hours, minutes, seconds, and tenths of seconds.

The MIDI Player



The MIDI component allows you to load and play MIDI music files.

The MIDI component's display shows the current track, and time elapsed or remaining.

The **Tempo** slider allows you to increase or decrease the MIDI file's playback speed by as much as 50%.

The MIDI player's display shows the Time Elapsed and Time Remaining in hours, minutes, seconds, and tenths of seconds.

The CD Audio Player

The CD player allows you to play CD audio disks in your CD-ROM drive. The CD component offers a custom play list and allows you to label a compact disc with a title that the software displays automatically every time you click the Program button while that CD is in the tray. It also allows you to label individual tracks and disable or "skip" tracks.

Use the Playlist (by pressing Program on any of the components) to enter and edit the CD's title, artist, and names of tracks.

The Eject button ejects the CD from your CD-ROM drive.

The CD player's display shows the Time Elapsed and Time Remaining in hours, minutes, seconds, and frames.

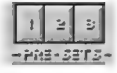
The Audio Mixer

The features of the audio mixer depend on your sound card's capabilities. If you are using a sound card other than the UltraSound Plug & Play, some of the features described here may not be available to you.

The Audio Mixer allows you to adjust volume levels and panning for MIDI, CD, and WAVE playback, Line-in and Mic-in, and recording gain. The Mixer also allows you to mute inputs and outputs to keep noise to a minimum. You can save as many as three Mixer "presets" to restore the Mixer controls to specific settings with the press of one button.

Adjust levels for each input and output using the level sliders. Adjust left and right channels separately by dragging the two sliders independently, or click the **Lock** button to adjust them together.

Click the **Mute** button beneath an input or output's level slider to mute it, or click Master Mute to mute all inputs and outputs.



To set Mixer settings to one of the **Preset** buttons, click on one of the Preset buttons, adjust the Mixer settings, then click the **Set** button. To use the preset Mixer settings, just click the appropriate Preset button.

Select a recording source for recording by clicking **Line**, **Mic**, **MIDI**. Or choose **Mixed** to mix the sound recorded from more than one source.

Windows® Utilities

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Introduction

UltraSound Mixer

UltraSound Windows Drivers

Manually Changing Driver Settings

Performance Considerations

Introduction

Your UltraSound card's software includes a variety of Windows utilities and programs. The UltraPnP Mixer gives you complete control over the card's inputs, outputs, and playback volumes. The UltraSound drivers give you control over the way your UltraSound works in Windows. This chapter describes the included Windows software and explains how to use it.

UltraSound Windows Features

- Supports 8 and 16-bit playback in all Windows .WAV formats (8-bit, 16-bit, Mono, Stereo, 11025 Hz, 22050 Hz, 44100, and 48000 Hz).
- Supports 16-bit recording in all formats.
- Allows simultaneous (full-duplex) recording and playback. For best results, make sure that the frequencies are the same, and the DMA channels for recording and playback are different.
- Supports 32-voice, onboard wavetable synthesis.
- Includes a General MIDI patch set comprised of 192 instruments, drums, and sound effects for playing MIDI files. (An additional 5.6 MB General MIDI patch set is available on CD for cards with RAM.

...Introduction, cont'd.

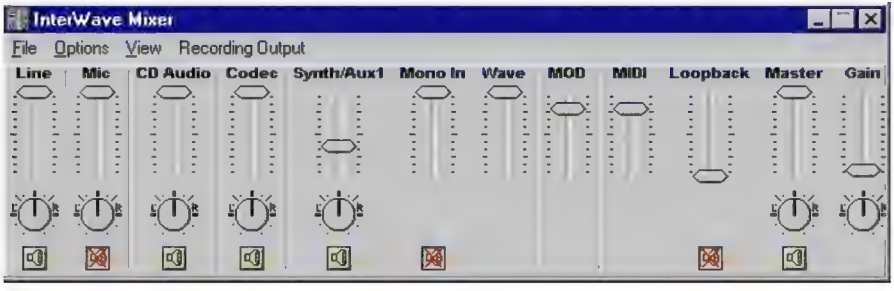
- UltraSound cards with RAM are able to cache, or preload, patches from the General MIDI set into onboard memory. For applications that do not yet use patch caching, the UltraSound software also allows you to load a small General MIDI set or manually load specific patches.
- Supports full MIDI IN and MIDI OUT capabilities.

The UltraSound driver works with Windows 95 and with Windows 3.1 in 386 Enhanced Mode only.

UltraPnP Mixer

The UltraPnP Mixer controls the mixer facilities of your UltraSound card. The Mixer lets you enable or mute inputs and outputs and change the levels (volume) and balance of each individually.

Most people will prefer to use the **WinDecks** mixer, with its convenient remote, to control the card's Mixer functions. The InterWave mixer, however, contains tools for recording and complex mixing functions.



UltraPnP Mixer

Click on the loudspeaker icon beneath each input and output to enable or mute it. Any combination of inputs is possible. For instance,

...UltraPnP Mixer, cont'd.

you can enable the Microphone and Line inputs at the same time. Drag the level sliders up and down to adjust the volume of each input and output individually, or use the Master level slider to adjust all the levels at the same time.

Views

For most purposes, the Basic View (in the View menu) will be sufficient. If you want to do more complex mixing, choose Advanced View.

Muted Inputs

By default, the Line, Microphone, and Loopback inputs are muted to eliminate noise during playback. We recommend that you leave these inputs muted when you are not using them.

Recording Output

Select a recording source from the Recording Output menu. You can record from a single input or choose Master to mix several signals.

Saving Options

By default, the Save on Exit option is selected. Deselect it if you do not wish to save your changes.

UltraSound Windows Drivers

Driver Configuration

Windows® 95 selects the appropriate settings for your sound card automatically.

If you are running Windows 3.1, you can use the Driver Configuration window (in the Drivers Control Panel) to define custom settings for the UltraSound Windows driver. When you press the OK button, your changes are saved in the Windows SYSTEM.INI file. The next time you start Windows, the new selections will be in effect. If you change the Baseport, DMA, or IRQ, you will have to restart Windows.

If the UltraSound driver has been installed, Audio for UltraSound Plug & Play will be listed in the Installed Drivers box in Windows 3.1.

Manually Changing Driver Settings in DOS or Windows 3.1

Run **UltraSound Setup** (SETUP.EXE) from the ULTRAPNP directory. See Appendix H for instructions.

DOS Utilities

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Introduction

IWINIT.EXE

PLAY.EXE

IWSBIOS.BAT

Introduction

Your UltraSound card's software includes a few DOS-based programs.

IWINIT.EXE

PLAY.EXE

IWSBOS.BAT

IWINIT.EXE

Most software will work even if IWINIT has not been run; however, IWINIT is required for some software to be able to use the MIDI port, and it also resets the UltraSound to stop any continuously playing sounds. (Continuously playing sounds may occur if you reboot your computer while the UltraSound is playing a sound or sound file.)

IWINIT.EXE is a utility that initializes your UltraSound Plug & Play for use. Gravis strongly recommends that you leave the 'C:\ULTRAPNP\IWINIT.EXE line in your AUTOEXEC.BAT file. This line is added automatically during the UltraSound installation.

We recommend that you run IWINIT.EXE to re-initialize the card after playing a DOS game, especially if you have used IWSBOS or Mega-Em for sound emulation.

To run IWINIT.EXE, change to your C:\ULTRAPNP directory, then type: IWINIT and press Enter.

Play

The DOS Audio Player (PLAY.EXE) is installed in the ULTRAPNP directory. This simple command-line program allows you to play any .WAV or MIDI file. To play a file:

Type: PLAY filenames

PLAY.EXE accepts DOS wildcards (e.g., *.wav).

IWSBOS.BAT

The IWSBOS program allows the UltraSound Plug & Play to emulate a Sound Blaster card for sound support in DOS games. For more information, see **Chapter 2, Sound for Games**.

Mega-Em

Mega-Em allows the UltraSound Plug & Play to emulate a Roland® Sound Canvas or MT-32, General MIDI, or Sound Blaster sound card. For detailed instructions, see **Chapter 2, Sound for Games**.

Book Topics

Digital Recording and Music

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Wavetable Sound Basics

Recording Sound Waves

Avoiding Recording Problems

Improving Your Recording Results

UltraSound and Music

MIDI

Wavetable Sound Basics

How Digital Recording Works

The end point of each vertical line represents a single sample of the wave's amplitude (loudness) at that time. The computer records this value at a constant rate, many times per second. At a sampling rate (frequency) of 22 kHz, 22,000 samples are taken per second. The computer can then re-construct the recorded wave exactly by converting each sample (one at a time at the same rate as recorded) back into an audio wave.

UltraSound uses wavetable synthesis to recreate the sound of an instrument by recording (digitizing) the actual instrument and playing it back. The result is a precise electronic reproduction of real instruments, far superior to the artificial sound produced by older sound technologies.

Recording Sound Waves

Digital recording captures sound by storing a sound wave's amplitude values at regular time intervals. The amplitude (height) of a sound wave determines its volume; its frequency (measured in Hertz, or Hz) determines its pitch.

Sound waves are continuous (analog), but computers can only work with digital information. So the computer stores the recorded signal's amplitude at precise intervals. It plays back the sound by converting the digital samples to a smooth analog signal through a DAC (Digital to Analog Converter). The more samples the computer takes per second (the sampling rate), the better the sound quality. (This is why your UltraSound Plug & Play generally sounds better with RAM added—**RAM-based samples** can be larger than the compressed samples in the card's base ROM chip.)

...Wavetable Sound Basics, cont'd.

UltraSound Plug & Play can record and play back at sampling rates of up to 48,000 times per second, or 48 KHz (DAT quality). For the best sound quality, sampled sounds should be recorded at twice the frequency that they occur in nature (or greater). Since humans can hear from 20 Hz to 20 KHz, 48 KHz sampling reproduces excellent sound quality.

The sampling resolution, or bit depth, also influences recording accuracy. Bit depth refers to the number of measurable steps, or levels of sound loudness. An 8-bit sample can have up to 256 levels of sound; a 16-bit, CD-quality sample can have 65,536 levels.

UltraSound can play both 8-bit and 16-bit WAV and SND digital sound files.

Avoiding Recording Problems

Aliasing is unwanted mixing of frequency information that often manifests itself as a harsh, high-frequency distortion. Recording at 22 KHz or higher virtually eliminates aliasing.

Clipping is distortion that occurs when the recording level is set too high. You will hear loud pops and clicks when the recorded signal exceeds the limits of the analog to digital circuitry. Reducing the record level eliminates clipping.

Quantization errors and noise may result from the rounding off that the computer may do to store data. UltraSound greatly reduces rounding off errors by a process called interpolation, where values are generated between each sample, resulting in smoother, more natural sound reproduction. HDD transfer rate limitations may also cause quantization errors.

Noise refers to digital hiss or pops and clicks. You can reduce hiss significantly by recording near, but never exceeding, the maximum sound level. Most recording software includes recording level VU meters, or another method, to make this easy to accomplish.

A small amount of digital hiss is unavoidable with 8-bit recording,

...Avoiding Recording Problems, cont'd.

although it is usually masked by the recorded signal. One major cause of digital noise is stray radio frequencies from your power supply or other computer components that produce a few steps of random numbers. Because 16-bit recording allows 65,536 steps of loudness, compared to the 256 steps allowed with 8-bit recording, the few random steps of digital noise produce much less audible noise.

Move your UltraSound to a slot as far as possible from the power supply, hard disk controller, and video cards to reduce noise in your digital recording.

Improving Your Recording Results

Recording to disk requires high data transfer speed (throughput) between your sound card and your hard disk. If you have difficulty with pops, clicks, or gaps in your recordings, try these suggestions.

Optimize your hard drive. Optimize the free space on your hard drive so that recorded data can be placed in one contiguous area of the disk. Use a program like Norton Utilities' Speed Disk, PC Tools' Compress, Golden Bow's V-Opt, and DOS 6.x's DEFRAG. You have to optimize only the free space, so this should take only a few minutes. Optimize between takes when using high sampling frequencies or recording in stereo.

Do not record to a compressed disk. DoubleSpace, Stacker, and other disk compression schemes limit disk data throughput because data must first be compressed before writing to disk. At high sampling rates, your disk subsystem may not be fast enough to allow recording without glitches.

Do not use a memory manager while you are recording. EMM386, QEMM, 386MAX, and other memory managers add processing time to disk reads and writes, which may result in problems getting your data onto the disk fast enough.

...Improving Your Recording Results, cont'd.

Use as fast a processor as possible for recording. You can compensate for some of the above conditions with a faster CPU.

Use sound compression. UltraSound Plug & Play offers 4:1 ADPCM and 2:1 μ-law and A-law compression to help alleviate throughput problems by reducing the amount of data before sending it to your disk subsystem.

Try a 16-bit DMA channel. Because some motherboards do not have working 16-bit DMA channels, UltraSound's default DMA is an 8-bit channel. (The 8-bit channels are 0–3; 16-bit channels are 4–7.) If the 16-bit DMA channels work on your computer, use one—performance, especially stereo recording, will be better. If strange things happen with the 16-bit channel, switch back to a free 8-bit channel.

UltraSound and Music

UltraSound can play simultaneously up to 32 notes from any combination of 32 real or digitally synthesized voices. With your UltraSound, you can create and mix sounds into studio-quality musical arrangements. The sounds that UltraSound uses to play back MIDI files are CD-quality voices (patches) digitized from real musical instruments (or synthesized using digital wavetable synthesis) so that what you hear through your stereo or headphones is incredibly real and dynamic.

MIDI

MIDI (Musical Instrument Digital Interface) is a digital communication standard that lets you connect MIDI-equipped music devices to each other to transfer music and performance data. This lets you control keyboards, synthesizers, drum machines, etc., from your UltraSound-equipped computer.

For example, connecting a MIDI keyboard via the (optional) MIDI Adaptor lets you "play" any of your UltraSound's instruments (patches) an acoustic piano or snare drum, or any of the myriad of digitized sounds supplied. Of course, you don't need a keyboard to play your UltraSound: it is a self-contained music studio you can play with your computer's MIDI software.

...UltraSound and Music, cont'd.

MIDI is also a file format that records sound events such as a note being played, the instrument playing, how long the note plays, and how loud. These events can then be reproduced exactly as they were entered, with the flexibility to change things such as the instrument, loudness, or note. MIDI music files conserve disk space: only the events are recorded, not the actual sounds.

The Game Port and Test Software

Click on green-highlighted text to jump to a related topic in the book

To return, click the Back button in the tool bar at the top of the page.

Introduction

Enabling and Disabling the Game Port

GravUtil

Introduction

UltraSound Plug & Play's 15-pin connector is a combination game and MIDI port. It supports all PC-compatible joysticks and works with the Gravis GrIP MultiPort™ and the Gravis Y-cable (or any Y-cable designed to work with joystick/MIDI ports).

If you choose to use the UltraSound Plug & Play game port, you must be sure to remove or disable any other game ports in your computer.

Enabling and Disabling the Game Port

The UltraSound Setup program lets you choose whether to enable or disable the game port on the UltraSound Plug & Play card.

In Windows® 95

If Windows 95 detects an existing game port in your computer (many multi-I/O cards include a game port), it will disable the game port on your UltraSound card—even if you chose to enable it during the UltraSound Setup. If you wish to use the game port on your UltraSound, you must disable the other game port in your system.

1. Use the Windows 95 Device Manager (in Settings/Control Panel/System) to "remove" the existing game port.
2. Shut down your computer and disable the game port (usually done using an on-board jumper—see your game port's manual for instructions).
3. Restart your computer. Windows 95 auto-detects the game port on your UltraSound Plug & Play and asks you to install a driver; choose the default Windows driver.

In Windows 3.1 or DOS

If you chose "Yes" to use the UltraSound game port in the UltraSound Setup, but decide to use another game port in your computer, you must disable the UltraSound Plug & Play game port. If you keep more than one active game port in your computer, you will likely have conflicts.

To disable the UltraSound Plug & Play game port:

Run the UltraSound Setup (SETUP.EXE) program from your \ULTRAPNP directory. Accept the current settings, then choose **No** when the Setup program asks you whether you wish to enable the game port.

To enable the UltraSound game port:

Run the UltraSound Setup (SETUP.EXE) program from your \ULTRAPNP directory. Accept the current settings, then choose **Yes** when the Setup program asks you whether you wish to enable the game port.

GravUtil

GravUtil, a DOS-based joystick testing utility, is installed with your UltraSound Plug & Play software. This software is not necessary for using a joystick; it is provided only for testing and troubleshooting purposes. If your joystick does not work in the UltraSound Plug & Play game port, or if you experience problems with joystick drift or erratic control, run GravUtil.

To run GravUtil:

Type: GRAVUTIL and press Enter.

Click on the image of a controller to test, or click Test Gameport.

Follow the on-screen instructions to test and calibrate your controller (instructions are often located in the status bar at the bottom of the screen). For context-sensitive help, press F1 at any time.

After you have calibrated your joystick and tested the game port, click the Speed Compensation button. (This option applies only if you are using the game port on your Gravis UltraSound card.) The software determines the correct game port speed compensation setting for your computer system.

...GravUtil, cont'd.

To use this speed compensation setting every time you start your computer:

Substitute GravUtil's recommended setting for the value in the line "ULTRAJOY=27" in your AUTOEXEC.BAT file.

If you experience problems with a specific game, you can experiment with different ULTRAJOY settings. You can change the ULTRAJOY setting in DOS at any time by changing to your UltraSound directory and typing ULTRAJOY [#] <Enter>. You can use any value from 2 to 31. The default is 27.

If you find a setting that works well with a specific game, you can also use the ULTRAJOY #line in a batch file with the game's .EXE command and path to start the game.

Troubleshooting

Click on green-highlighted text to jump to a related topic in the book

To return, click the Back button in the tool bar at the top of the page.

Up-To-Date Information

Please look for a "README" file on your UltraSound CD or supplemental disks for up-to-date technical information.

DOS Troubleshooting

My UltraSound isn't producing sound.

I can't record sounds from my microphone.

My sound is playing in starts and stops. It sounds jerky.

I'm having trouble with my game using IWSBOS.

My sound plays, but it has lots of static.

I'm having problems with the 16-bit DMA channels

Windows Troubleshooting

I have problems playing MIDI and .WAV files.

I received a Windows Initialization Error.

Media Player volume problems.

Windows for Workgroups memory requirements.

When I play a .WAV file, it doesn't make any sound.

Some .WAV files contain unexpected pauses and clicks.

DOS Troubleshooting

My UltraSound isn't producing sound.

Your UltraSound may not be connected securely, and may not be seated properly in the bus slot. Reset the card, or try a different bus slot.

If you are running sound through your stereo:

Make sure that your stereo is working correctly and connected properly. Make sure that you have selected the correct input at the back of your stereo and that the correct input selector switch is set at the front panel of your stereo. Use any input on your stereo except the phono input—it will sound terrible, and could damage your speakers and phono input!

Is there a conflict with another device or card?

Change the settings of the conflicting card. To identify conflicts, remove all the non-essential cards from your machine and re-install them one by one. After installing each card, run the software that is giving you trouble, and note whether the problem occurs. When you find the card causing the problem, check its DMA channel, IRQ, and Baseport. Once you have identified the conflict, change the appropri-

...DOS Troubleshooting, cont'd.

ate setting. Be careful not to cause a conflict with any other card in your system.

Is your UltraSound in a 16-bit slot?

Make sure that the UltraSound card is in a 16-bit slot in your computer.

I can't record sounds from my microphone.

Your microphone may be plugged into the wrong connector. Check that it is plugged into the Microphone In connector, that it is a compatible dynamic or condenser microphone, and that it is turned on.

My sound is playing in starts and stops. It sounds jerky.

Your hard disk is probably fragmented or too slow. This is most often a problem when recording at a high sample rate and resolution. To prevent this problem, obtain and run a disk defragmenting utility. (If you have DOS 6.0 or later, you can use DEFRAG.) It is only necessary to optimize the "free space" on your hard disk, so look for this option in your disk optimizing software.

When errors occur in a part of a recording, they can almost always be corrected by simply re-recording the same material—as long as the

...DOS Troubleshooting, cont'd.

second recording is no longer than the first.

I'm having trouble with my game using IWSBOS. It either makes no sound at all, or it sounds garbled and funny.

A number of problems could cause this.

1. Make sure that IWSBOS was loaded successfully. Type: IWSBOS.

IS IWSBOS loaded and running?

2. If you are trying to use a game in Sound Blaster or Adlib mode, make sure that you run IWSBOS first—before you start the game. If you're not sure, exit the game and type IWSBOS again.

Did you select a sound card?

3. Check the game's setup. Did you select a sound card? Most games have a specific configuration step where you have to "tell" the game to use a specific sound card. Usually, this step is called Setup and is available from the game's main menu. Sometimes you select the sound card by running a separate program called Setup or Install.

...DOS Troubleshooting, cont'd.

4. Some games require you to enter an additional parameter for sound board support when starting the game. For example, you may have to type C:\KILLERCOWS SBLASTER. (Killer Cows is not a real game.) If your game requires this, load IWSBOS first, then start the game with this additional parameter.

Is your MIDI IRQ compatible?

5. This problem could also indicate that the MIDI IRQ variable (the last one) in the SET ULTRAPNP string in your AUTOEXEC.BAT file is incompatible with IWSBOS. The MIDI IRQ must be either 2, 3, 5, or 7 (5 or 7 recommended). CAUTION: Be careful not to select a variable that is used by one of your other devices.

   Some programs require IRQ 7 as the default IRQ. Run **Setup** to change your MIDI IRQ to 7.

   Some programs look only at the BLASTER environment string for IRQ and DMA. Make sure that SET ULTRAPNP and SET BLASTER commands in your AUTOEXEC.BAT file have the same IRQ and DMA channels selected.

...DOS Troubleshooting, cont'd.

Do you have enough free conventional memory?

6. Check that the application has enough conventional memory to run with audio after loading IWSBOS. You may need to change your system configuration (i.e., by loading drivers high, removing drivers, etc.) to free more memory. See your DOS manual for more information on memory management.

   If you are using QEMM, run Optimize to locate more free memory. If you have DOS 6.0 or later, use MEMMAKER.

Are your IWSBOS files in the right directory?

7. Make sure that the files required for IWSBOS are in the same directory, and that the directory is in the IWSBOS path.

Is your UltraSound in a 16-bit slot?

8. Make sure that the UltraSound card is in a 16-bit slot in your computer.

My sound plays, but it has lots of static.

Check the connections.

...DOS Troubleshooting, cont'd.

I'm having problems with the 16-bit DMA channels

UltraSound's default DMA channel is a 16-bit channel. For best performance, try to run UltraSound on a 16-bit channel: using a 16-bit channel allows the UltraSound to transfer data twice as fast. If your motherboard does not have working 16-bit DMA channels (some do not), you will have to switch to an 8-bit channel.

The 8-bit channels are 0–3; the 16-bit channels are 4–7. Stereo recording will be better on 16-bit channels.

Windows Troubleshooting

I have problems playing MIDI and .WAV files.

If no sound occurs when you play MIDI files, or instruments seem to be missing:

Make sure that the UltraSound setup is selected in the MIDI Mapper.

Set the MIDI Volume scroll bar to the top (Win 95 Multimedia Drivers control panel) or far right (Win 3.1 Drivers control panel)—the highest volume.

Pause or stop playing the MIDI file, stop any .WAV file that is playing, and restart the MIDI file.

I received a Windows Initialization Error.

An error may have occurred in the GRVSULTR.386 driver. Make certain that the line DEVICE=GRVSULTR .386 is in the [386ENH] section of the SYSTEM.INI. Also make sure that the GRVSULTR.386 file is in your \WINDOWS\SYSTEM directory.

The UltraSound driver requires Windows 95 or Windows 3.1, running in Enhanced mode.

...Windows Troubleshooting, cont'd.

The UltraSound driver may not have been initialized because of a DRAM failure or a base address conflict.

During Windows initialization, the driver may have been unable to validate the UltraSound hardware. Run SETUP from the \ULTRAPNP program group. This diagnostic tool will verify that your hardware settings are correct and report any hardware failures.

1. Exit Windows (or Restart in DOS Mode from Windows 95).
2. Set the DOS environment variable ULTRADIR to the UltraSound directory. For example: Type: SET ULTRADIR=C:\ULTRAPNP <enter>

   (This is set only until you turn off your computer.)
3. Verify that the IW.INI file exists in the \ULTRAPNP directory.
4. Restart Windows.

The driver needs the IW.INI file to initialize itself to play MIDI files.)

...Windows Troubleshooting, cont'd.

The volume increases after I pause and restart some MIDI files using Media Player.

Some versions of Media Player send MIDI controller messages only the first time a MIDI file begins to play. Since the MIDI controller messages that affect volume are not sent when playback is resumed, a default volume is used, and this may be louder than the composer intended. This is a bug in Media Player.

When I use Windows for Workgroups, I need more PC memory than I did with a standard Windows installation.

If you have installed Windows for Workgroups, note that it typically requires twice as much PC memory to regain the performance that you had with a standard Windows installation. An option is available to disable resource sharing under Windows for Workgroups. This option will conserve memory.

When I play a .WAV file, it doesn't make any sound.

A .WAV file uses extended RAM. For example, a 2 MB .WAV file uses 2 MB of extended RAM. If you don't have enough extended RAM

...Windows Troubleshooting, cont'd.

available—which varies with the number of applications you have open—you'll have problems.

Quit as many applications as possible to free extended RAM.

Is the Wave Volume set too low?

Use the **WinDecks** or **UltraPnP Mixer** to set the Wave Volume to the highest volume.

Is another sound card conflicting with the UltraSound card?

If another audio card is installed, check that the UltraSound is set up as the first Wave device in the SYSTEM.INI. The [DRIVERS] section of the SYSTEM.INI should have the following line:

WAVE=INTERWAV.DRV

Other audio cards will be designated as WAVE1, WAVE2, etc.

Technical Support

Click on a Topic or click on the arrow at the bottom of the page to continue reading through the book.

Throughout this book, you can click on green-highlighted text to jump to a related topic.

To return, click the Back button in the tool bar.

Technical Support Instructions

Support by Telephone

Support by Electronic Mail

Technical Support Instructions

Technical support is available to all registered owners of Advanced Gravis products. Before you call, please read the README file on your the MultiPort CD. There is no charge for technical support, except possible long distance charges.

Technical Support Tips

- If only certain programs are affected, read their manuals for information relating to joysticks and game cards.
- Call from a phone where you have access to your computer so you can test suggestions and provide any additional information that may be required.
- Please be prepared to provide the following information:

  Name, address and telephone number
  The name of the Gravis product
  Make and Model of your computer
  Your system software and version
  The MultiPort software version number
  Names and versions of all affected software programs
  Symptoms of the problem, and what led to them

Support By Telephone

Technical support is available by telephone 8:00 AM–4:30 PM Pacific Coast Time Monday–Thursday, 8:00 AM–3:30 PM Friday.

In the United States, Canada, and Mexico, please call:

Phone: (604) 431-1807 Fax: (604) 431-9358

In Europe, please call one of these numbers:

Austria	0660-5791	Luxembourg	0800-2778
Belgium	0800-16778	Netherlands	31-36-536 4443
Denmark	800-17838	Norway	800-11335
Finland	9800-13228	Portugal	05-05313318
France	05-906053	Spain	900-993129
Germany	0130-810654	Sweden	020-795845
Hungary	00800-11727	Switzerland	155-8605
Ireland	1800-553168	UK	0800-894383

If your country is not listed, please call either (604) 431-1807 (Canada) or +31-36-536-4443 (Netherlands).

If telephone support is not convenient, we welcome questions sent via fax or **e-mail**.

Support By Electronic Mail

This Web Site is the hub of Gravis' online support network. For the most current and detailed information and files, look here

Contact Advanced Gravis at the following addresses:

Internet Web Site:	http://www.gravis.com
Internet E-mail:	tech@gravis.com (Canada)
	gravis@euronet.nl (Europe)
Internet File Server:	ftp.gravis.com -or - archive.epas.utoronto.ca pub/pc/ultrasound
Internet Mail List:	gus-general-request@mail.orst.edu subscribe
CompuServe®:	Go PCVENB area #14
Advanced Gravis BBS:	(604) 431-5927 V32bis N81
Advanced Gravis Europe BBS:	+31-36-536-0379 V32bis N81
America On-Line:	email Adv Gravis go keyword: Gravis

Upgrade Options

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Memory Upgrade

Installing Memory

Gravis Joystick Y-Cable

Gravis Universal MIDI Adaptor

Ordering Information

Memory Upgrade

Buying RAM

UltraSound Plug & Play supports RAM in 30-pin SIMMs with access time of 80ns or less. Purchase RAM direct from Gravis or from your local computer reseller.

Adding RAM memory to the card upgrades it to full UltraSound compatibility, opening up a much wider range of features and software options:

- Custom sound capabilities

- Patch caching to allow larger sound samples for more realistic sound production

- Better sound in games that support UltraSound (80% of new games from major publishers do)

UltraSound Plug & Play supports up to 8 MB of RAM for custom sounds. Add RAM in 30-pin 1 MB or 4 MB SIMMs. If you've upgraded your computer's RAM recently, you may have some 1 MB SIMMs around the house. Otherwise, you can purchase them direct from Gravis or from your local computer reseller.You can use any 30-pin SIMM with access time of 80ns or less.

Installing Memory

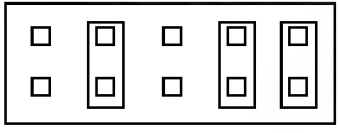
✳ **Power off your computer and ground yourself to a metal part of the computer's case, or wear a grounding wrist strap when installing memory.**

...Memory Upgrade, cont'd.

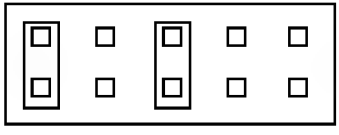
The memory sockets are located along the top edge of the sound card.

1. Place a chip into a socket on the UltraSound card.
2. Press firmly until all of the pins are secure in the socket, and the top of the chip is flush with the top of the socket.
3. Repeat this procedure to install each chip.
4. **If your card came with no RAM on it, skip to step 5.** If your card came with 512K of RAM on it, you will have to adjust the memory configuration using the jumpers on the card (JP8).

Note: If your card had no RAM on it when you purchased it, JP8 is permanently wired to support up to 8 MB of RAM in 1 MB or 4 MB SIMMs. The UltraSound initialization software will auto-detect any added RAM; no jumper setting is required in this case.



If your UltraSound Plug & Play has 512K, 768K, 1 MB, 1.5 MB, or 2.5 MB of RAM installed on it, set the jumper blocks on JP8 in these positions.



If your UltraSound Plug & Play has 4 or 8 MB of RAM installed on it, set the jumper blocks on JP8 in these positions.

...Memory Upgrade, cont'd.

✳ **Caution! Before you power on your computer, double check that you have installed each chip correctly. If you install a chip backwards, it will heat up and cause damage to your UltraSound card or other components in your computer.**

5. Follow the instructions in the **Appendix E** for running UltraSound Setup to set up your UltraSound Plug & Play to use the onboard RAM.

Gravis Joystick Y-Cable

Because the joystick connector on your UltraSound Plug & Play is also a MIDI connector, regular Y-cable joystick adapters do not work with the card. This is because some of the pins on the joystick port are reserved for MIDI functions. We recommend the special Joystick Y-Cable made by Advanced Gravis that allows you to connect two joysticks to your UltraSound Plug & Play.

Gravis Universal MIDI Adaptor

A full-featured MIDI adaptor with MIDI IN, OUT, and THRU connectors, two 15-pin joystick connectors, 4-foot cable, MIDI activity LEDs, and a bonus 6-foot MIDI cable. Works with any sound card that has a 15-pin ìDî connector UART/MPU 401-type MIDI interface, including Sound Blaster™, Pro Audio Spectrum, and of course, UltraSound Plug & Play and UltraSound!

Ordering Information

Please call, write, or fax Gravis or your computer dealer for pricing and availability on these items.

To place orders from the U.S. or Canada, please call the Gravis Mail Order Service at 1-800-257-0061.

If you are calling from outside the U.S. and Canada, call Gravis Consumer Sales at (604) 431-5020.

Mega-Em

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To return, click the Back button in the tool bar.

Introduction

Using Mega-Em

Valid options for Mega-Em

Configuring Software for Mega-Em

Using Mega-Em. A Step-by-Step Example

Introduction

Mega–Em is a program that lets you emulate the Roland MT-32, Roland Sound Canvas General MIDI, and Sound Blaster using your Gravis UltraSound.

Mega–Em Features

- Quality Roland Sound Canvas and MT-32 music emulation
- Sound Blaster emulation, with generally improved sound quality over a real Sound Blaster card
- Loads entirely into the EMS memory space — uses no lower or upper DOS memory
- Fast: entirely written in Assembler, with many custom options

Mega–Em Requirements

- 386 or better AT class personal computer with hard drive
- Gravis UltraSound Plug & Play sound card
- Expanded Memory Manager, such as EMM386.EXE, QEMM386 or 386MAX

...Introduction, cont'd.

- Approximately 80K of free Expanded Memory (EMS). Mega–Em uses no low or high DOS memory (i.e., no conventional memory)

Important Notes

Mega–Em is constantly improved and updated. Check the Gravis Internet Web Site (http://www.gravis.com) for updated versions.

Using Mega–Em

To load Mega–Em, from your UltraSound directory, type:

MEGAEM [options] **<enter>**

Valid options for Mega–Em

For each option, **type:** MEGAEM [option] **<enter>**. For example:

Type: MEGAEM -U **<enter>** to unload MEGAEM. You must do this to use other UltraSound software.

-H or -? Displays the Mega–Em help screen.

-U or -F Unloads Mega–Em from memory. You must do this to use other UltraSound software.

-ROFF Turns off Roland emulation.

-SBOFF Turns off Sound Blaster emulation.

-RIRQx Specifies Roland IRQ. By default, Mega–Em will not generate a Roland IRQ since very little software requires it. If your software fails on Roland initialization, use this option, preferably using IRQ 2. Valid IRQ values are x=2, 3, 5 or 7.

-NOEMS Forces Mega–Em to load when EMS services are disabled (for example, when the NOEMS option is used in your EMM386 command line). Note that you must still have a memory manager loaded to run Mega–Em.

...Valid Options, cont'd.

-MT	Emulates a Roland MT-32/LAPC1. The default is to emulate a Roland Sound Canvas. If your software does not support Sound Canvas/SCC1/General MIDI, use MT-32/LAPC1/Roland support ("Roland" alone usually refers to the MT-32/LAPC1 devices).
-L	Enables the UltraSound line input.
-Mxx	Specifies music volume level. The default level is 12. The valid range is xx =1–16 (loudest).
-Vxx	Specifies master volume level. The default level is 16. The valid range is xx =1–16 (loudest).
-COx	Coexist with real MPU-401 MIDI interface. Mega-Em will work correctly with a real MPU-401 MIDI interface installed in the system, but by default no software can access the real interface while emulation is active. Use this option to use Mega–Em together with a real MPU-401 MIDI interface. This can be useful for DOS-based MIDI sequencers.
X=1	Allows both input and output to real MPU-401. With this

...Valid Options, cont'd.

option, music will play through both the external MIDI device(s) and the UltraSound synthesizer.

X=2 Only allows input from real MPU-401. Music will only play through the UltraSound. Using this option may also increase Mega–Em's compatibility with systems that have a real MPU-401.

Configuring Software for Mega–Em

Software programs are configured for different sound devices in many ways. Some attempt to auto-detect sound devices and use the best one they find; others prompt you to select a device while you are running the program, or require you to delete a configuration file to change the configuration. Most common is the use of a setup program, usually called SETUP, INSTALL or CONFIG. For the correct procedure for a specific program, you should consult the program's manual.

OK, I know how to configure my software; now what?

First make sure Mega–Em is loaded and emulation is on. If the program has auto-detect, simply running the program should detect the devices you are emulating. If you are prompted to select a sound device, select the one you have your emulation set up for.

But there are too many options. What do I choose?

For the Roland MT-32 emulation you should look for 'MT-32' or 'LAPC1'. Some software just lists 'Roland' as an option. This usually refers to the MT-32. Remember that if you select this option you must run MEGAEM -MT; otherwise Mega–Em will emulate a Sound Canvas by default.

...Configuring Software for Mega–Em, cont'd.

For Roland Sound Canvas emulation (the default), look for 'Sound Canvas,' 'SCC1' or 'General MIDI.'

If you have the option of MT-32 or Sound Canvas, select Sound Canvas for the best performance.

For Sound Blaster emulation, look for Sound Blaster.

Now the program is asking for my sound card settings. What should they be?

- A MIDI interface – Select Roland MPU-401.
- A Roland base address – Select 330 hex.
- A Roland IRQ setting – Select IRQ 2 or 9. If your software fails to initialize the Roland, try using the -RIRQx switch with MEGAEM.EXE.
- A Sound Blaster base address – Select the SB Baseport you chose in the UltraSound Setup unless you have used the -SBBxxx switch with MEGAEM.EXE.
- A Sound Blaster IRQ – Select your SB IRQ unless you have used the -

...Configuring Software for Mega–Em, cont'd.

SBIx switch with MEGAEM.EXE.

- A Sound Blaster DMA channel – Select 1.

By now you should be ready to run your software. Always remember to load Mega–Em before running the software. Many programs will crash if they are set up for a certain music device but can't locate it.

Using Mega–Em. A Step-by-Step Example

This example assumes that your program's manual tells you to configure your sound options with a program called INSTALL, and that the program is run by typing START <enter>.

Step 1. Load MEGAEM.EXE by typing : MEGAEM <enter>.

If you need to use any options, type : MEGAEM [options] <enter>.

Step 2. Load the installation program by typing: INSTALL <enter>.

Step 3. Answer any prompts until you are prompted to select a sound device.

Assume you are given the following options:

- Adlib
- Sound Blaster
- Roland MT-32/LAPC1
- Roland Sound Canvas
- Roland MT-32/LAPC1 with Sound Blaster
- Roland Sound Canvas with Sound Blaster

...Example, cont'd.

Step 4. In this case you should select Roland Sound Canvas with Sound Blaster because it will probably give the best music performance and digital sound effects. Any of the above examples will work with Mega–Em, but Adlib will not give any sound, and Sound Blaster will not play any music or "FM" effects.

Step 5. Complete the rest of the prompts from the installation program. If prompted whether or not to save the configuration, select YES.

Step 6. Start your program.

You should never have to configure the program again. Just make sure you have loaded Mega–Em before you start the program.

Full-Duplex Capabilities

Click on a Topic or click on the arrow at the bottom of the page to continue reading through the book.

Introduction

Setting Up the Card for Full-Duplex Operation

Introduction

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To return, click the Back button in the tool bar at the top of the page.

Gravis UltraSound cards are among the only sound cards that include full-duplex capabilities: simultaneous recording and playback for bidirectional communication in Internet phone, video-conferencing, and similar applications.

With most sound cards, Internet phone applications give you "walkie-talkie-style" communications. One person talks, says "over," and then the other can respond. With full-duplex sound cards like UltraSound Plug & Play at both ends, you get "telephone-style" simultaneous two-way communication.

Setting Up the Card for Full-Duplex Operation

Full-Duplex Setup

Make sure that the Record DMA and Playback DMA are set to **different channels**.

To use your UltraSound card's full-duplex capabilities, you may have to change a its DMA settings. The card's Record DMA and Playback DMA must be set to different channels. The default settings of DMA 5 and 7 should work well.

Run **UltraSound Setup** to change these (double-click the UltraSound Setup icon in Windows, or type: SETUP from your C:\ULTRAPNP directory in DOS).

Book Topics

UltraSound Setup

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Introduction

Settings

Introduction

The UltraSound Setup program allows you to choose hardware settings for your UltraSound Plug & Play. You can run the SETUP.EXE program from the C:\ULTRAPNP directory at any time to choose new settings.

If you run SETUP.EXE from Windows® 95, Win 95 automatically selects settings that will not conflict with the settings of the other cards and devices in your system.

Settings

DMA Channels

In order to use the full duplex capabilities of the card, you must select different DMA channels for Play DMA and Record DMA.

CD-ROM Baseport

If you do not plan to connect a CD-ROM drive to the UltraSound Plug & Play's IDE interface, select Disabled for the CD-ROM Baseport address.

The Setup program suggests settings that will work well in most systems. Unless you know that these settings conflict with other cards or devices in your system, use the defaults (the "Express" settings).

Settings	Express	Custom
UltraSound Baseport:	220	220, 230, 240, 250, 260
UltraSound IRQ:	11	5, 7, 11, 12, 15
SB (Sound Blaster™) IRQ:	5	5, 7
Play DMA:	7	1, 3, 5, 6, 7
Record DMA:	5	1, 3, 5, 6, 7
CD-ROM Baseport:	170	168, 170, 1E8, Disabled
ATAPI Baseport:	376	36E, 376. 3EE
CD-ROM IRQ:	15	10, 11, 12, 15
MPU401 Baseport:	330	330, 332, 334, 336
MPU401 IRQ:	9	9, 10, 11

Record your settings in your UltraSound Plug & Play Quick Start to use for reference when you install other cards or devices.

Modifications to Your System Files

When you accept the selected settings, the Setup program adds C:\ULTRAPNP to the PATH, modifies the SYSTEM.INI, and adds these lines to the AUTOEXEC.BAT (some numbers may differ, depending on the settings you have chosen):

SET INTERWAVE=C:\ULTRAPNP\IW.INI. Tells programs where to find the InterWave root directory.

SET BLASTER=A220 I5 D1 T1. Sound Blaster settings: Base Address, IRQ, DMA, card type.

Audio Quality Specifications

Click on a Topic or click on the arrow at the bottom of the page to continue reading through the book.

Channel Gains

Frequency Cutoff

Stereo Separation

Total Harmonic Distortion

Signal to Noise

Channel Gains

Click on green-highlighted text to jump to a related topic in the book

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The values in this table represent the measurement of gain from the specified source to the specified destination.

SOURCE	SOURCE LEVEL (dBVrms)	DESTINATION	GAIN (dB)
Line In	-10	Line Out	≥-1
Line In	-10	Line Out (loopback)	≥-1
Line In	-10	ADC CODEC	*ACD DATA >3400
CD Audio	-10	Line Out	≥-1
Mic In	-50	Line Out	≥42
DAC GF1	A=32767, V=3900	Line Out	≥-11
DAC CODEC	A=5000	Line Out	>-11

Where:
1) A=Peak DAC data value (therefore peak to peak=65535=full output range)
2) V=Contents of voice Current Volume register
3) * ADC CODEC data must be <20 for 0 Vrms source level
4) Loopback is the mode in which the Line in signal is routed through the CODEC ADC (analog to digital converter), and the digital result is then routed internally to the CODEC DAC (digital to analog converter), the output of which appears at the Line Outputs.

Frequency Cutoff

These values represent the upper and lower 3dB cutoff frequency from the specified source to the specified destination.

SOURCE	DESTINATION	LOWER (Hz)	UPPER (KHz)
Line In	Line Out	≤20	≥20
Line In	ADC CODEC	≤20	≥20
Line In	Line Out (loopback)	≤20	≥20
CD Audio	Line Out	≤20	≥20
Mic In	Line Out	≤100	≥15
GF1 Synth	Line Out	≤20	≥20
CODEC	Line Out	≤20	≥20

Where: Loopback is the mode in which the Line In signal is routed through the CODEC ADC, and the digital result is then routed internally to the CODEC DAC, the output of which appears at the Line Outputs.

Stereo Separation

A 1 KHz signal is applied to the LEFT source channel only. The difference in signal amplitude between the destination LEFT and destination RIGHT channels is the separation figure. All unused signal paths must be muted during this test.

SOURCE	SOURCE LEVEL (dBVrms)	DESTINATION	SEPARATION
Line In	-10	Line Out	≥50
Line In	-10	ADC CODEC	≥50
Line In	-10	Line Out (loopback)	≥50
CD Audio	-10	Line Out	≥50
GF1 DAC	A=32767, V=3900, P=0	Line Out	≥50
CODEC DAC	A=5000	Line Out	≥50

Where:
1) A=Peak DAC data value (therefore peak to peak=65535=full output range)
2) V=Contents of voice Current Volume register
3) P=Contents of Voice Pan Position register
4) Loopback is the mode in which the Line In signal is routed through the CODEC ADC, and the digital result is then routed internally to the CODEC DAC, the output of which appears at the Line Outputs

Total Harmonic Distortion

Measurements are to be made with a 1 KHz source adjusted for a destination signal level of -5 dBVrms. Only the energy in the first 20 harmonics is measured. Note that these are not THD+N figures.

SOURCE	DESTINATION	THD
Line In	Line Out	≤0.1
Line In	CODEC ADC	≤0.1
Line In	Line Out (loopback)	≤0.1
CD Audio	Line Out	≤0.1
GF1 DAC	Line Out	≤0.1
CODEC DAC	Line Out	≤0.1
Mic In	Line Out	≤0.1

Where: Loopback is the mode in which the Line In signal is routed through the CODEC ADC, and the digital result is then routed internally to the CODEC DAC, the output of which appears at the Line Outputs.

Signal to Noise

This measurement is done by taking the destination output level at clipping (output=1% THD) and subtracting the noise floor level. The noise floor is measured by disabling all audio paths except for the path being tested.

SOURCE	DESTINATION	SNR
Line In	Line Out	≥85
Line In	CODEC ADC	≥75
Line In	Line Out (loopback)	≥75
CD Audio	Line Out	≥85
GF1 DAC	Line Out	≥75
CODEC DAC	Line Out	≥75
Mic In	Line Out	≥55

Where: Loopback is the mode in which the Line In signal is routed through the CODEC ADC, and the digital result is then routed internally to the CODEC DAC, the output of which appears at the Line Outputs.

RAM Software Setup

Throughout this book, you can click on green-highlighted text to jump to a related topic.

To return, click the Back button in the tool bar.

Introduction

RAM Software Setup

Introduction

By purchasing an UltraSound Plug & Play Pro sound card (with 512K RAM onboard), or by adding RAM to your standard UltraSound Plug & Play, you gain total compatibility with the large range of games and software written to support the UltraSound standard.

Now, in over 80 percent of DOS games, you can simply choose "UltraSound" to hear the dynamic music and special effects. Sound cards without RAM can't support custom sound patches, and most cards have to mix sound down into a single digital channel—"flattening" the sound quality and stealing CPU cycle time from the game. With RAM onboard, UltraSound Plug & Play supports custom sounds, 32 digital channels, and hardware mixing, for incredibly rich sound that won't slow down your games.

Ready to add RAM? See the **Upgrade Options** chapter in the main guide for instructions on purchasing and installing RAM.

Installing the RAM Upgrade Software

It's easy to upgrade your UltraSound software setup to make use of the RAM on your card:

1. Insert the appropriate UltraSound software disk (for Windows 95 or DOS) into your floppy drive.
2. If you're installing from Windows 95, select Start/Run, then type A:SETUP.EXE and press Enter.

   If you're installing from DOS, type A:SETUP and press Enter.
3. Accept the current hardware settings, then answer Yes when the Setup program asks whether there is RAM installed on the card.
4. Insert the UltraSound CD in your CD-ROM drive. Select "RAM Support" from the Installation menu, and follow the instructions on screen.

General MIDI Instruments

Click on a Topic or click on the arrow at the bottom of the page to continue reading through the book.

These are the instrument mappings for the 5.7 MB UltraSound patch set on the UltraSound CD.

UltraSound General MIDI Drum Set

UltraSound General MIDI Instrument Set

UltraSound General MIDI Drum Set

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Program Number	Note	General MIDI Name	UltraSound Name	Size (K)
27	D#1	High Q	HIGHQ	3.9
28	E1	Slap	SLAP	12.1
29	F1	Scratch Push	SCRATCH1	9.1
30	F#1	Scratch Pull	SCRATCH2	4.9
31	G1	Sticks	STICKS	8.8
32	G#1	Square Click	SQRCLICK	0.6
33	A1	Metronome Click	METCLICK	0.6
34	A#1	Metronome Bell	METBELL	0.6
35	B1	Acoustic Bass	KICK1	9.6
36	C2	Bass Drum 1	KICK2	10.4
37	C#2	Side Stick	STICKRIM	6.0
38	D2	Acoustic Snare	SNARE1	17.5
39	D#2	Handclap	CLAPS	11.8
40	E2	Electric Snare	SNARE2	8.6
41	F2	Low Floor Tom	TOMLO2	19.6
42	F#2	Closed High Hat	HIHATCL	9.5
43	G2	High Floor Tom	TOMLO1	13.5
44	G#2	Pedal High Hat	HIHATPD	4.0
45	A2	Low Tom	TOMMID2	18.5

...UltraSound General MIDI Drum Set, cont'd.

Program Number	Note	General MIDI Name	UltraSound Name	Size (K)
46	A#2	Open High Hat	HIHATOP	40.4
47	B2	Low-Mid Tom	TOMMID1	13.5
48	C3	Hi-Mid Tom	TOMHI2	13.5
49	C#3	Crash Cymbal 1	CYMCRSH1	63.4
50	D3	High Tom	TOMHI1	13.5
51	D#3	Ride Cymbal 1	CYMRIDE1	35.7
52	E3	Chinese Cymbal	CYMCHINA	48.6
53	F3	Ride Bell	CYMBELL	34.9
54	F#3	Tambourine	TAMBORIN	18.3
55	G3	Splash Cymbal	CYMSPLSH	63.4
56	G#3	Cowbell	COWBELL	6.7
57	A3	Crash Cymbal 2	CYMCRSH2	62.4
58	A#3	VibraSlap	VIBSLAP	19.3
59	B3	Ride Cymbal 2	CYMRIDE2	35.7
60	C4	Hi Bongo	BONGOHI	7.3
61	C#4	Low Bongo	BONGOLO	9.2
62	D4	Mute High Conga	CONGAHI1	8.8
63	D#4	Open High Conga	CONGAHI2	9.8
64	E4	Low Conga	CONGALO	9.8

...UltraSound General MIDI Drum Set, cont'd.

Program Number	Note	General MIDI Name	UltraSound Name	Size (K)
65	F4	High Timbale	TIMBALEH	10.9
66	F#4	Low Timbale	TIMBALEL	19.8
67	G4	High Agogo	AGOGOHI	7.3
68	G34	Low Agogo	AGOGOLO	7.3
69	A4	Casaba	CASABA	17.2
70	A#4	Maracas	MARACAS	9.4
71	B4	Short Whistle	WHISTLE1	4.3
72	C5	Long Whistle	WHISTLE2	2.2
73	C#5	Short Guiro	GUIRO1	8.6
74	D5	Long Guiro	GUIRO2	18.9
75	D#5	Claves	CLAVES	5.1
76	E5	High Wood Block	WOODBLK1	5.1
77	F5	Low Wood Block	WOODBLK2	7.7
78	F#5	Mute Cuica	CUICA1	19.0
79	G5	Open Cuica	CUICA2	26.1
80	G#5	Mute Triangle	TRIANGL1	4.8
81	A5	Open Triangle	TRIANGL2	31.9
82	A#5	Shaker	SHAKER	6.6
83	B5	Jingle Bell	JINGLES	34.3

...UltraSound General MIDI Drum Set, cont'd.

Program Number	Note	General MIDI Name	UltraSound Name	Size (K)
84	C6	Bell Tree	BELLTREE	64.1
85	C#6	Castinets	CASTINET	12.4
86	D6	Mute Surdo	SURDO1	19.6
87	D#6	Open Surdo	SURDO2	19.6

UltraSound General MIDI Instrument Set

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Pianos	0	Acoustic Grand	AcPiano1	7	65.3
	1	Bright Acoustic Piano	BritePno	6	72.7
	2	Electric Grand Piano	SynPiano	5	11.5
	3	Honky-Tonk Piano	Honky	7	128.0
	4	Rhodes Piano	Epiano1	1	15.0
	5	Chorused Piano	Epiano2	1	44.2
	6	Harpsichord	Hrpschrd	4	7.7
	7	Clavinet	Clavinet	4	3.4
Chromatic	8	Celesta	Celeste	1	20.2
Percussion	9	Glockenspiel	Glocken	1	10.7
	10	Music Box	Musicbox	1	31.0
	11	Vibraphone	Vibes	1	21.0
	12	Marimba	Marimba	1	4.5
	13	Xylophone	Xylophon	1	19.0
	14	Tubular Bells	Tubebell	2	18.6
	15	Dulcimer	Santur	1	43.8
Organ	16	Hammond Organ	Homeorg	1	2.0
	17	Percussive Organ	Percorg	1	15.4

...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
	18	Rock Organ	Rockorg	1	60.8
	19	Church Organ	Church	1	4.6
	20	Reed Organ	Reedorg	1	3.5
	21	Accordian	Accordn	2	19.6
	22	Harmonica	Harmonca	3	15.3
	23	Tango Accordian	Concrtna		17.9
Guitar	24	Acoustic Guitar (nylon)	NyGuitar	1	39.2
	25	Acoustic Guitar (steel)	AcGuitar	2	52.6
	26	Electric (jazz)	Jazzgtr	3	55.9
	27	Electric (clean)	Cleangtr	3	46.0
	28	Electric (muted)	MuteGtr	2	34.5
	29	Overdriven Guitar	Odguitar	4	25.8
	30	Distortion Guitar	Distgtr	4	38.2
	31	Guitar Harmonics	Gtrharm	1	10.1
Bass	32	Acoustic Bass	AcBass	1	11.0
	33	Electric (finger)	FngrBass	1	19.8
	34	Electric (pick)	Pickbass	2	33.2
	35	Fretless Bass	Fretless	2	5.6
	36	Slap Bass 1	Slapbas1	2	56.1

...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
	37	Slap Bass 2	Slapbas2	2	41.5
	38	Synth Bass 1	Synbass1	1	12.6
	39	Synth Bass 2	Synbass2	1	6.1
Strings &	40	Violin	Violin	3	25.0
Orchestral	41	Viola	Viola	4	56.4
	42	Cello	Cello	3	18.8
	43	ContraBass	Contraba	1	9.7
	44	Tremolo Strings	Tremstr	2	122.9
	45	Pizzicato Strings	Pizzicato	2	40.2
	46	Orchestral Harp	Harp	3	23.9
	47	Timpani	Timpani	1	14.4
Ensemble	48	String Ensemble 1	Marcato	2	122.9
	49	String Ensemble 2	Slowstr	1	36.7
	50	Synth Strings 1	SynStr1	1	62.8
	51	Synth Strings 2	SynStr2	1	29.4
	52	Choir Aahs	Choir	1	45.3
	53	Voice Oohs	Doo	2	17.3
	54	Synth Voice	Voices	1	30.2
	55	Orchestra Hit	OrchHit	1	28.8

...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Brass	56	Trumpet	Trumpet	2	13.6
	57	Trombone	Trombone	2	26
	58	Tuba	Tuba	1	11.9
	59	Muted Trumpet	Mutetrum	5	19.0
	60	French Horn	Frenchhrn	2	28.6
	61	Brass Section	Hitbrass		63.3
	62	Synth Brass 1	Synbras1	1	61.7
	63	Synth Brass 2	Synbras2	1	60.6
Reed	64	Soprano Sax	Sprnosax	4	14.7
	65	Alto Sax	AltoSax	3	11.7
	66	Tenor Sax	TenorSax	3	17.4
	67	Baritone Sax	Barisax	1	10.2
	68	Oboe	Oboe	15	9.3
	69	English Horn	Englhorn	3	24.7
	70	Bassoon	Bassoon	6	16.8
	71	Clarinet	Clarinet	7	19.2
Pipe	72	Piccolo	Piccolo	1	8.9
	73	Flute	Flute	1	12.3
	74	Recorder	Recorder	1	5.6

...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
	75	Pan Flute	WoodFlut	1	4.2
	76	Blow Bottle	Bottle	1	25.0
	77	Shakuhachi	Shakazul	1	62.6
	78	Whistle	Whistle	1	12.0
	79	Ocarina	Oscarina	1	3.5
Synth Lead	80	Lead 1 (square)	Sqrwave	1	30.4
	81	Lead 2 (sawtooth)	Sawwave	2	54.5
	82	Lead 3 (Calliope lead)	Calliope	1	46.3
	83	Lead 4 (Chiff lead)	Chiflead	1	63.4
	84	Lead 5 (Charang)	Charang	4	80.6
	85	Lead 6 (voice)	Voxlead	1	30.3
	86	Lead 7 (fifths)	lead5th	1	13.2
	87	Lead 8 (bass + lead)	Bass & Lead	2	53.4
Synth Pad	88	Pad 1 (new age)	Fantasia	1	47.2
etc.	89	Pad 2 (warm)	Warmpad	1	36.5
	90	Pad 3 (polysynth)	Polysyn	1	60.7
	91	Pad 4 (choir)	Ghostie	1	63.3
	92	Pad 5 (bowed)	Bowglass	1	50.5
	93	Pad 6 (metallic)	Metalpad	1	60.9

...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
	94	Pad 7 (halo)	Halopad	1	60.3
	95	Pad 8 (sweep)	Sweeper	1	62.7
Synth SFX	96	FX 1 (rain)	Aurora	1	62.5
	97	FX2 (soundtrack)	Soundtrk	1	40.0
	98	FX 3 (crystal)	Crystal	1	60.8
	99	FX 4 (atmosphere)	Atmosphr	1	63.0
	100	FX 5 (brightness)	Freshair	1	58.3
	101	FX 6 (goblin)	Unicorn	1	60.5
	102	FX 7 (echoes)	Echovox		30.2
	103	FX 8 (sci-fi)	Startrak	1	55.1
Ethnic	104	Sitar	Sitar	2	37.0
	105	Banjo	Banjo	3	64.5
	106	Shamisen	Shamisen	2	26.7
	107	Koto	Koto	2	42.0
	108	Kalimba	Kalimba	1	4.7
	109	BagPipe	BagPipes	4	16.0
	110	Fiddle	Fiddle	3	12,3
	111	Shanai	Shannai	4	20.1

...UltraSound General MIDI Instrument Set, cont'd.

Sound Group	Instrument Number	General MIDI Name	UltraSound Name	No. of Samples	Size (k)
Percussive	112	Tinkle Bell	Carillion	1	12.0
	113	Agogo	Agogo	1	27.7
	114	Steel Drums	Steeldrm	1	24.2
	115	Woodblock	Woodblk	1	7.7
	116	Taiko	Taiko	1	37.7
	117	Melodic Tom	Toms	1	13.5
	118	Synth Drum	Syntom	1	61.0
	119	Reverse Cymbal	Revcym	1	27.4
SFX	120	Guitar Fret Noise	Fx-fret	1	27.5
	121	Breath Noise	Fx-blow	1	57.7
	122	Seashore	Seashore	1	62.4
	123	Bird Tweet	Jungle	1	27.5
	124	Telephone Ring	Telephon	1	9.2
	125	Helicopter	Helicptr	1	50.3
	126	Applause	Applause	1	60.5
	127	Gunshot	Pistol	1	31.1

Shareware—What Is It?

Throughout this book, you can click on green-highlighted text to jump to a related topic.

To return, click the Back button in the tool bar.

Some of the programs bundled with the UltraSound product are shareware. These programs were written by users like you who were enthusiastic about the product and wished to write programs specifically for our card. Since the shareware and public domain concepts are quite often misunderstood, what follows is an explanation by The Association of Shareware Professionals (ASP) from their article, "What is Shareware?".

Some Definitions

The Shareware Concept

Contacting ASP Members via CompuServe

Some Definitions

You've probably heard the terms public domain, freeware, shareware, and others like them. Your favorite BBS or disk vendor probably has many programs described by one or more of these words. There's a lot of confusion about and between these terms, but they actually have specific meanings and implications. Once you understand them, you'll have an easier time navigating the maze of programs available to you, and understanding what your obligations are, or aren't, with each type of program.

Let's start with some basic definitions:

Public domain has a very specific legal meaning. It means that the creator of a work (in this case, software), who had legal ownership of that work, has given up ownership and dedicated the work "to the public domain." Once something is in the public domain, anyone can use it in any way they choose. The author has no control over the use and cannot demand payment for it.

If you find a program that the author has explicitly put into the public domain, you are free to use it however you see fit without paying for the right to use it. But use care –due to the confusion over the meaning of the words, programs are often described by authors as being

...Some Definitions, cont'd.

public domain when, in fact, they are shareware or free, copyrighted software. Look for an explicit statement from the author to be sure a program is public domain.

Copyrighted is the opposite of public domain. A copyrighted program means the author has asserted his or her legal right to control the program's use and distribution, by placing the legally required copyright notices in the program and documentation. The law gives copyright owners broad rights to restrict how their work is distributed, and provides for penalties for those who violate these restrictions. When you find a copyrighted program, you must use it in accordance with the copyright owner's restrictions regarding distribution and payment. Usually, these are clearly stated in the program documentation.

Maintaining a copyright does not necessarily imply charging a fee, so it is possible and perfectly legal to have copyrighted programs which are distributed free of charge. The fact that a program is free, however, does not mean it is in the public domain—though this is a common confusion.

Shareware is copyrighted software which is distributed by authors

...Some Definitions, cont'd.

through bulletin boards, on-line services, disk vendors, and copies passed among friends. It is commercial software which you are allowed to use and evaluate before paying for it. This makes shareware the ultimate in money back guarantees.

The Shareware Concept

Most money back guarantees work like this: You pay for the product and then have some period of time to try it and see whether or not you like it. If you don't like it or find that it doesn't do what you need, you return it (undamaged) and at some point - which may take months - you get your money back. Some software companies won't even let you try their product! In order to qualify for a refund, the diskette envelope must have an unbroken seal. With these "licensing" agreements, you only qualify for your money back if you haven't tried the product. How absurd!

Shareware is very different. With shareware you get to use it for a limited time, without spending a penny. You are able to use the software on your own system(s), in your own special work environment, with no sales people looking over your shoulder. If you decide not to continue using it, you throw it away and forget all about it. No paperwork, phone calls, or correspondence to waste your valuable time. If you do continue using it, then – and only then –do you pay for it. Shareware is a distribution method, NOT a type of software. Shareware is produced by accomplished programmers, just like retail software. There is good and bad shareware, just as there is good and bad retail software. The primary difference between shareware and retail

...The Concept, cont'd.

software is that with shareware you know if it's good or bad BEFORE you pay for it.

As a software user, you benefit because you get to use the software to determine whether it meets your needs before you pay for it, and authors benefit because they are able to get their products into your hands without the hundreds of thousands of dollars in expenses it takes to launch a traditional retail software product. There are many programs on the market today which would never have become available without the shareware marketing method.

The shareware system and the continued availability of quality shareware products depend on your willingness to register and pay for the shareware you use. The registration fees you pay allow us to support and continue to develop our products.

Please show your support for shareware by registering those programs you actually use and by passing them on to others.

Shareware is kept alive by YOUR support!

Contacting ASP Members Via CompuServe

There is an easy and convenient way to speak directly to many ASP Members (both authors and vendors). Visit the shareware forum on CompuServe. Simply type "GO SHAREWARE," "GO SHARE," or "GO ASPFORUM" from any CompuServe ! prompt.

Here you will be able to talk to the authors of your favorite shareware programs, learn about other programs, ask questions, make suggestions, and much more. We'd love to meet you on-line, please come visit us today!

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Warranty

Throughout this book, you can click on green-highlighted text to jump to a related topic.

To return, click the Back button in the tool bar.

Warranty

Garantie de Advanced Gravis (Français)

Garantie von Advanced Gravis (Deutsch)

Garantia de Advanced Gravis (Español)

Advanced Gravis 3-Year Warranty

Advanced Gravis Computer Technology Ltd. (hereinafter referred to as GRAVIS) warrants to the original purchaser of the Gravis UltraSound Plug & Play (hereinafter referred to as ULTRASOUND) manufactured by GRAVIS that it will be free of defects in materials and workmanship for a period of 1 year from the original date of purchase.

Information on obtaining warranty services is provided in the "Warranty Claim Instructions" section. Proof of purchase must be provided when requesting work be done during the warranty period. All warranty claims must be sent to GRAVIS—do not return your ULTRASOUND to the place of purchase.

In no event will GRAVIS be responsible for any indirect, special, incremental, consequential or similar damages or lost data or profits to you or any other person or entity regardless of the legal theory, even if we have been advised of the possibility of such damage. Some states do not allow the exclusion or limitation of consequential damages, so the above limitation or exclusion may not apply to you. Our liability for any damage to you or any third party in the event that any of the above limitations are held unenforceable shall not exceed three times the fee you paid for the ULTRASOUND regardless of the form of any

...Warranty, cont'd.

claim.

During the warranty period, GRAVIS will repair, (or at its option replace with a reconditioned ULTRASOUND) at no extra charge, components that prove to be defective, provided the ULTRASOUND is returned with proof of purchase and shipped prepaid to Advanced Gravis.

Warranty Claim Instructions

Carefully read the warranty section and provide a detailed description of the problem including the make and Model of your computer system and the name, version and publisher of the software you are using.

The means of product shipment to GRAVIS is at your cost and discretion. We suggest that you insure your Gravis MULTIPORT in case of damage during shipment. GRAVIS is not responsible for product lost or damaged in shipment.

We regret that warranty claims originating in the U.S. that are shipped to the Canadian address must be refused due to customs and importation require-

...Warranty, cont'd.

ments. To avoid customs charges for warranty claims originating outside the U.S. or Canada, please state on the customs documents that the product is being returned for warranty repair.

Include the following information:

- Your name and address
- Home and business numbers
- Fax number (if applicable)
- A copy of your original sales bill
- A description of the problem

Garantie de Advanced Gravis

Advanced Gravis Computer Technology Ltd. (ci-après désigné sous le nom GRAVIS) garantit à l'acheteur original de la Gravis UltraSound Plug & Play (ci-après désigné sous le nom ULTRASOUND) fabriqué par GRAVIS, qu'elle ne présente aucun défaut de matériau ou de fabrication, et cela pour une période de trois années à compter de la date d'achat. Pour toute demande de réparation pendant la période de garantie, vous devez fournir une preuve d'achat. Toutes les réclamations doivent être adressées à GRAVIS : ne rapportez pas votre ULTRASOUNDau revendeur.

En aucun cas GRAVIS ne saurait être tenu responsable des dommages indirects, spéciaux, marginaux, consécutifs, ou similaires, ou de la perte de données ou de bénéfices à votre compte ou celui d'un tiers, quelle que soit la théorie juridique pouvant s'appliquer et même si nous avons été avertis de la possibilité d'un tel dommage. Certains États n'autorisant pas l'exclusion ou la limite des dommages indirects, les limites ou l'exclusion décrites ci-dessus peuvent ne pas vous concerner. Dans le cas où elles ne sont pas applicables, et en cas de dommages, notre responsabilité vis-à-vis de vous ou d'un tiers ne dépassera pas trois fois le prix d'achat de la ULTRASOUND, quelle que soit la forme de la réclamation.

...Garantie

Pendant la période de garantie, GRAVIS s'engage à réparer les composants défectueux (ou, àson choix, remplacer sans supplément la ULTRASOUND par une autre ULTRASOUND remise àneuf), sous réserve que la ULTRASOUND, accompagnée d'une preuve d'achat, soit expédiée en port pré-payé à : Advanced Gravis Computer Technology.

Clients canadiens et étrangers
101-3750 North Fraser Way
Burnaby, B.C. V5J 5E9
Canada

Clients des États-Unis
1790 Midway Lane
Bellingham, WA 98226
États-Unis

Instructions pour faire valoir une rèclamation sous garantie

Veuillez lire attentivement la section sur la garantie et fournir une description détaillée du problème, en indiquant la marque et le modèle de votre ordinateur, ainsi que le nom, la version et l'éditeur du logiciel utilisé.

...Garantie

Les frais d'expédition d'un produit à GRAVIS sont à votre charge et le choix du mode de transport vous appartient. Nous vous suggérons d'assurer votre ULTRASOUND contre la perte ou les dommages subis pendant le transport. GRAVIS n'est pas responsable de la perte du produit ou des dommages subis par celui-ci au cours du transport.

Les réclamations de garantie expédiées à l'adresse canadienne à partir des États-Unis seront renvoyées à l'expéditeur en raison des réglementations d'importation et de taxes douanières. Pour les réclamations faites en dehors des États-Unis ou du Canada, veuillez préciser sur les formulaires des douanes que vous retournez pour réparation un produit sous garantie. Vous éviterez ainsi des frais de douane.

Veuillez fournir les informations suivantes :

- Vos nom et adresse.
- Vos numéros de téléphone (domicile et lieu de travail).
- Votre numéro de télécopieur (le cas échéant).
- Une photocopie de la facture originale.
- Une description du problème.

Garantie von Advanced Gravis

Advanced Gravis Computer Technology Ltd. (im folgenden Gravis genannt) garantiert dem Erstbesitzer des von GRAVIS hergestellten Gravis UltraSound Plug & Play (im folgenden ULTRASOUND genannt) für die Dauer von drei Jahre ab Kaufdatum, daß das Produkt frei von Material- und Verarbeitungsfehlern ist. Alle Garantieansprüche müssen direkt über GRAVIS abgewickelt werden, geben Sie daher den ULTRASOUND nicht an Ihren Händler zurück.

GRAVIS haftet nicht für alle mittelbaren, speziellen, zufälligen oder Folgeschäden bzw. ähnlichen Schäden, einschließlich Daten- oder Vermögensverluste, die Ihnen oder einer anderen Person oder juristischen Person entstehen, unabhängig von der gültigen Rechtsauffassung, selbst dann, wenn GRAVIS von der Möglichkeit solcher Schäden in Kenntnis gesetzt wurde. In

einigen Ländern ist eine Haftungsbeschränkung oder der Ausschluß von Folgeschäden nicht erlaubt. Daher ist es möglich, daß der oben beschriebene Haftungsausschluß bzw. die Haftungsbeschränkung nicht auf Sie zutreffen. In keinem Fall kann Ihr Schadensersatzanspruch oder der eines Dritten gegenüber GRAVIS den dreifachen Betrag, den Sie für den ULTRASOUND bezahlt haben, überschreiten.

...Garantie

Während der Garantiezeit repariert GRAVIS fehlerhafte Komponenten auf eigene Kosten, vorausgesetzt, der ULTRASOUND wurde zusammen mit einem Kaufnachweis an eine der genannten Adressen von Advanced Gravis Computer Technology Ltd. geschickt. Dabei bleibt es Gravis überlassen, das defekte Gerät zu reparieren oder durch ein generalüberholtes auszutauschen.

Kanadische und internationale Kunden
101-3750 North Fraser Way
Burnaby, B.C. V5J 5E9
Kanada

Nordamerikanische Kunden (USA)
1790 Midway Lane
Bellingham, WA 98226
USA

Hinweise Zur Garantieabwicklung

Lesen Sie den Abschnitt mit den Garantiebestimmungen sorgfältig durch, und legen Sie beim Einreichen des Garantieanspruchs eine genaue Problembeschreibung bei. Geben Sie dabei Marke und Modell Ihres Computers sowie Namen, Version und Hersteller der von Ihnen verwendeten Software an.

...Garantie

Die Versandkosten tragen Sie, und es bleibt Ihnen überlassen, auf welche Art Sie das Produkt an GRAVIS zurückschicken. Wir empfehlen Ihnen, den Joystick gegen Verlust und Transportschäden zu versichern. GRAVIS lehnt jede Haftung für Produkte ab, die während des Versands beschädigt werden oder verlorengehen.

Garantieansprüche aus den USA, die an die kanadische Adresse geschickt werden, werden aus Zollgründen abgewiesen und an den Absender zurückgeschickt. Wenn Sie einen Garantieanspruch aus dem Ausland schicken, geben Sie bitte auf dem Zollformular an, daß Sie ein in Kanada hergestelltes Produkt aus Reparaturgründen im Rahmen der Gewährleistung an den Hersteller zurückschicken.

Geben Sie ferner folgende Informationen an:

- Ihren Namen und Ihre Adresse.
- Telefonnummern, unter denen Sie privat und geschäftlich zu erreichen sind.
- Faxnummer (falls vorhanden).
- Eine Kopie Ihres Kaufnachweises.
- Eine genaue Fehlerbeschreibung.

Garantia de Advanced Gravis

Advanced Gravis Computer Technology Ltd. (denominada en adelante GRAVIS) garantiza al comprador original del bastón de mando Gravis UltraSound Plug & Play (denominado en adelante ULTRASOUND), fabricado por GRAVIS, que el producto estará libre de defectos de material y mano de obra por un período de 3 años desde la fecha de adquisición original. Cuando solicite reparaciones durante el período de garantía, el usuario deberá suministrar un comprobante de compra. Todos los reclamos de garantía deben enviarse a GRAVIS. No devuelva su ULTRASOUND al lugar de adquisición.

GRAVIS no se responsabiliza por ningún daño o perjuicio indirecto, especial, incremental, consecuente o similares o por la pérdida de datos o ganancias sufridas por el usuario o por cualquier otra persona o entidad, independientemente de la teoría legal, aun si GRAVIS hubiera recibido aviso sobre la posibilidad de tales daños y perjuicios. Algunos estados de los Estados Unidos no permiten la exclusión o limitación de los daños y perjuicios consecuentes, por lo que la limitación precedente puede no ser aplicable en todos los casos. La responsabilidad de GRAVIS por cualquier daño o perjuicio al usuario o a terceros, en caso de que alguna de las limitaciones precedentes no fuera legalmente aplicable, no excederá el triple del monto que el

...Garantia

usuario pagó por el ULTRASOUND, independientemente de la forma del reclamo.

Durante el período de garantía, GRAVIS reparará los componentes defectuosos (o a opción de GRAVIS los reemplazará por un ULTRASOUND reacondicionado sin costo adicional), siempre que el usuario devuelva el ULTRASOUND, con comprobante de adquisición y lo envíe con flete prepago a: Advanced Gravis Computer Technology Ltd.

Clientes internacionales y canadienses
101–3750 North Fraser Way
Burnaby, BC V5J 5E9
Canadá

Clientes de los Estados Unidos
1790 Midway Lane
Bellingham, WA 98226
EE.UU.

Instrucciones para reclamos de garantia

Lea cuidadosamente la sección de la garantía y proporcione una descripción detallada del problema, incluidos la marca y modelo de su

...Garantia

sistema de computadora y el nombre, versión y editor del software que utiliza.

El costo del medio de transporte del producto a GRAVIS estará a cargo y discreción del cliente. Sugerimos asegurar el ULTRASOUND contra pérdida o daños durante el transporte. GRAVIS no acepta responsabilidad por la pérdida o daños de los productos durante el transporte.

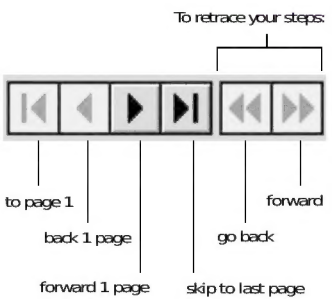
Los artículos enviados a la dirección canadiense desde los Estados Unidos se devolverán al remitente debido a las regulaciones de importación aduaneras e impositivas. Para evitar recargos aduaneros, cuando el reclamo de garantía se origina fuera de los Estados Unidos o Canadá, sírvase declarar en los documentos de aduana que el producto se devuelve para reparaciones bajo garantía.

Incluya la siguiente información:

* Nombre y dirección.
* Números de teléfono particular y comercial.
* Número de fax (si corresponde).
* Una copia de la boleta de venta original.
* Una descripción del problema.

How to Use this Guide

Navigating Buttons



Scroll Bar

Click the up arrow or drag the slider up to move back.

Click the down arrow or drag the slider down to move forward.

This guide is designed to make information easy to find. Read it "cover to cover" like a book if you like. Use the **navigating buttons** or the **scroll bar** to page through the guide.

Click the **Find** button to search for a specific topic.

Click the **Bookmarks** button to view the complete Contents list.

In the Contents ("Bookmarks") list, click the triangles to view subtopics, and double-click a topic to skip to that page in the guide.

Click the **Thumbnails** button to view small previews of each page.

Click the **Page View** button to return to the default view.

Click the **Resize** or **Zoom** buttons to change the page view size.

Use the **Hand** tool to move a document page on-screen when it does not fit within the window. Drag the hand tool in the direction you want to move the page.

Use the **Text** tool to select text to copy.